PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
PWO-0873		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/CA 03/00339	11.03.2003	11.03.2002
International Patent Classification (IPC) or both national classification and IPC		
G06F17/30		
Applicant		
RESEARCH IN MOTION LIMITED et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

I	☒	Basis of the opinion
II	☐	Priority
III	☒	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
IV	☐	Lack of unity of invention
V	☒	Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
VI	☐	Certain documents cited
VII	☐	Certain defects in the international application
VIII	☐	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
30.09.2003	15.06.2004
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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/CA 03/00339

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1-39 as originally filed

Claims, Numbers

1-20 filed with telefax on 07.04.2004

Drawings, Sheets

1/11-11/11 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐ contained in the international application in written form.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority in written form.

   ☐ furnished subsequently to this Authority in computer readable form.

   ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐ the description, pages:

   ☐ the claims, Nos.:

   ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

   ☐ the entire international application,

   ☒ claims Nos. 8

   because:

   ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

   ☒ the description, claims or drawings *(indicate particular elements below)* or said claims Nos. 8 are so unclear that no meaningful opinion could be formed *(specify)*:

   see separate sheet

   ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

   ☐ no international search report has been established for the said claims Nos.

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

   ☐ the written form has not been furnished or does not comply with the Standard.

   ☐ the computer readable form has not been furnished or does not comply with the Standard.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	9,10,13-17
	No:	Claims	1-7,11,12,18-20
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-7,9-20
Industrial applicability (IA)	Yes:	Claims	1-7,9-20
	No:	Claims	

2. Citations and explanations

see separate sheet

Re Item III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. Claim 8 does not meet the requirements of Article 6 PCT:

1.1 The technical meaning of the expressions "atomic mode" and "group mode" used in claim 8 are unclear and therefore lead to doubt about the scope of protection sought for. The definitions for said expressions at at page 13, lines 19-21 and at page 14, lines 1-3 should be included in claim 8. Care should be taken not to introduce further unclarity using the definitions.

1.2 The apparatus claim 8 should contain sturctural features. However, claim 8 comprises functional features (method steps; e.g. "that operates") and is therefore not clear concerning the category.

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. The following document (D) is mentioned:

   D1: WO 0160014

2. Claim 11 lacks novelty (Article 33(2) PCT).

   Document D1, which is considered to represent the most relevant state of the art for claim 11, discloses, according to the subject-matter of claim 11:

   - a computer implemented method for handling data requests from mobile devices (figure 1; page 16, lines 1-9), the method comprising:
   - receiving and storing data requests from the mobile devices (page 3, lines 29-33; page 13, lines 17-22);
   - comparing a received data request from a mobile device to prediction data to predict forecasted data request based on the comparison (page 10, lines 7-15; page 10, lines 27-36);

- requesting and receiving response data related to the received data request and the forecasted data requests (page 10, lines 27-36; page 24, line 28 - page 25, line 1); and
- preparing the response data for transmission to the mobile device over a wireless network (figure 1; page 15, lines 1-3).

3. If novelty were disputable based on minor differences of interpretation, it is pointed out that the subject-matter of claim 11 would still not involve an inventive step (Article 33(3) PCT).

4. The above finding applies also to apparatus claim 1 which corresponds in terms of structural features to method claim 11. Thus, claim 1 lacks novelty (Article 33(2) PCT.

5. Dependent claims 2-7, 9, 10, 12-20 do not contain any subject-matter which, in combination with the subject-matter to which they refer, meet the requirements of the PCT in respect of novelty and inventive step (Article 33(2) and (3) PCT). They are either disclosed in D1 (e.g. "identifying the mobile device from the data request"; "identifying a subset of prediction data based on the identity of the mobile device"; "comparing the subset of stored data requests to the received data request to predict the forecasted data requests") or common measures (e.g. assigning a probability value to the forecasted data requests"; "comparing the probability value to a threshold") obvious for a person skilled in the art.

6. The applicant is of the opinion that prior art D1 does not disclose all the features of independent claims 1 and 11. The IPEA cannot aggree for the following reasons:

   The applicant's first argument is that the pushed information of D1 is not a prediction of forecasted information, the second argument is that the forecasted data request relates to predicted data that a user may never access at the mobile device.

   However, the technical concept claimed in claims 1 (apparatus) and 11 (method) is to predict a data request from a mobile device with reference to the historical requests from the mobile device, and to provide the mobile terminal with the data

according to the predicted data request, i.e. the concept disclosed in D1.

In addition, the terms "predict" and "forecast" are synonyms. Thus, the feature "comparing a received data request from a mobile device to prediction data ot predict forecasted requests based on the comparison" is understood to prefetch data relating to previous data requests as it is disclosed in D1, page 10, lines 27-36.

The remaining features of claim 11 are interpreted as that the response data is additional information related to the data request prepared for transmission of the mobile device over a wireless network, e.g. for pushing the response data to the mobile device over the wireless network. This interpretation is supported by the description of the application, page 15, lines 3-4 and lines 12-14.

PCT/CA03/00339
What is claimed is:

1. A system for handling data requests from mobile devices, the system comprising:

a memory operable to store data requests received from at least one mobile device;

a state prediction module operable to access the memory and predict a first forecasted data request for a mobile device based on the stored data requests; and

a push module operable to receive the first forecasted data request from the state prediction module and in response request and receive first response data related to the first forecasted data request and prepare the first response data for transmission to the mobile device over a wireless network.

2. The system of claim 1, wherein the first forecasted data request is predicted in response to receiving a data request from the mobile device.

3. The system of claim 2, wherein the state prediction module is further operable to generate prediction data based on the stored data requests, and to update the prediction data based on the reception of a prediction notification received from the mobile device in response to the first response data.

4. The system of claim 1, wherein the state prediction module is further operable to predict the first forecasted data request independent of a data request received from the mobile device.

5. The system of claim 4, wherein:

the state prediction module is further operable to receive a data request from the mobile device and in response access the memory and predict a second forecasted data request based on the received data request and the stored data

requests; and

the push module is further operable to receive the received data request and the second forecasted data request from the state prediction module and in response request and receive second response data related to the received data request and the second forecasted data request and prepare the second response data for transmission to the mobile device over a wireless network.

6. The system of claim 4, wherein the state prediction module is further operable to predict the first forecasted data request on a periodic basis.

7. The system of claim 5, wherein the state prediction module is further operable to select prediction modes according to the identified subset of stored data.

8. The system of claim 7, wherein the prediction modes comprise:

an atomic mode that operates on stored data requests specific to the identity of the mobile device; and

a group mode that operates on stored data requests specific to a plurality of mobile devices.

9. The system of claim 5, wherein the state prediction module comprises a Markov chain module operable to predict the first and second forecasted data requests.

10. The system of claim 5, wherein the second forecasted data request comprises a set of consecutive data requests and consecutive response data referenced from the received data request.

11. A computer implemented method for handling data requests from mobile devices, the method comprising:

receiving and storing data requests received from the mobile devices;

comparing a received data request from a mobile device to prediction data to

 AMENDED SHEET

predict forecasted data requests based on the comparison;

requesting and receiving response data related to the received data request and the forecasted data requests; and

preparing the response data for transmission to the mobile device over a wireless network.

12. The method of claim 11, further comprising the steps of:

identifying the mobile device from the data request;

identifying a subset of prediction data based on the identity of the mobile device; and

comparing the subset of stored data requests to the received data request to predict the forecasted data requests.

13. The method of claim 12, further comprising the steps of:

assigning a probability value to the forecasted data requests;

comparing the probability value to a threshold;

if the probability value does not exceed the threshold, then:

expanding the subset of prediction data to include data requests from other mobile devices; and

predicting further forecasted data requests based on the expanded prediction data.

14. The method of claim 11, wherein the step of comparing a received data request from a mobile device to prediction data to predict forecasted data requests based on the comparison comprises the steps of:

selecting a set of states having a transition probability from a current mobile device state greater than a selection probability threshold;

incrementing the set of states until the set of states transition

probability from the current mobile device state is less than the selection probability threshold.

15. The method of claim 14, wherein the step of comparing a received data request from a mobile device to prediction data to predict forecasted data requests based on the comparison further comprises the steps of:

determining a cardinality of the set of states;

comparing the cardinality of the set of states to a maximum depth;

if the cardinality of the set of states exceeds the maximum depth, then adjusting the set of states.

16. The method of claim 15, wherein the step of adjusting the set of states comprises:

limiting the set of states to the maximum depth; and

selecting a subset of the set of states such that the transition probability from the current mobile device state is maximized.

17. The method of claim 14, further comprising the step of incrementing the selection probability threshold after each increment to the set of states.

18. The method of claim 11, further comprising the step of predicting an independent forecasted data request for a mobile device independent of a data request received from the mobile device.

19. The system of claim 18, further comprising the step of receiving a successful prediction notification from the mobile device and updating the prediction data based on the successful prediction notification.

20. The system of claim 18, wherein the step of predicting an independent forecasted data request is performed on a periodic basis.